

To
The Editor
Journal of Vectorial relativity

Ref. Reviewer's report on paper

Thanks for the message. I quote below the relevant part of Reviewer's report

accelerated mass m , where kinetic energy is K (body at a generic speed v),
Einstein's Kinetic energy expression is readily obtained:

$$\Delta K|_0^K = K = \int_{M_0}^m (m.v.dv + v^2.dm) = \int_{M_0}^m c^2.dm \Rightarrow K = \Delta m.c^2 \text{ for } \Delta m = m - M_0$$

$$K = m.c^2 - M_0.c^2 \tag{5}$$

Total Energy is the addition of kinetic energy plus internal energy. By
defining the internal energy as $E_{int} = M_0.c^2$, is obtained the celebrated
formula $E_{Total} = K + E_{int} \Rightarrow E_{Total} = m.c^2$, or for short $E = mc^2$, valid in
Einstein's jerk for any mass and for any speed v , explicitly observable in the

Einstein's definition of mass, $m = \frac{M_0}{\sqrt{1 - \frac{v^2}{c^2}}}$.

As it is observed and has been shown, $E = mc^2$ does not have any restriction.
Thus, the main statement done by author is wrong.

B) "2.0 Conditions of derivation of $K = W = M_{motion} c^2 - M_{rest} c^2$ " refers to

Author's response

The main theme of paper is NOT at all touched by Reviewer. Kindly see that I am
discussing, HOW REST MASS ENERGY ($E_{rest} = M_{rest} c^2$) IS OBTAINED by Einstein?

Reviewer concluded that I have objected

$$E_{motion} = E_T = KE + M_{rest}c^2 = M_{motion}c^2$$

or $E=mc^2$

which is not true.

It is justified below.

To avoid any confusion I have denoted subscripts with physical quantities

E_{motion} , M_{rest} , M_{motion} E_{rest} etc. rather than M , m E and E_0

I have eq.(10) in paper as

$$K = W = M_{motion} c^2 - M_{rest} c^2 \tag{10}$$

Reviewer has quoted it as eq.(5)

$$K = mc^2 - M_0c^2$$

Main objection in paper is

(i) **HOW REST MASS ENERGY IS OBTAINED BY EINSTEIN AS**

$$E_{\text{rest}} = M_{\text{rest}} c^2$$

(in no way $E=mc^2$ is questioned).

Reviewer has quoted it as

$$E_{\text{in}} = M_0 c^2$$

Reviewer has written

***By defining internal energy $E_{\text{in}} = M_0 c^2$ ***

It is not defined arbitrarily but mathematically obtained.

Kindly see the standard references where $E_{\text{rest}} = M_{\text{rest}} c^2$ is obtained.

[9] Einstein, A *Jahr. Rad. Elektr.* **4**, 411 (1907).

[10] Robert Resnick, *Introduction to Special Theory of Relativity* (John Wiley and Sons, New York, 1968), p. 120. (1968)

[11] Arthur Beiser, *Concepts of Modern Physics*, 4th edition (McGraw-Hill International Edition, New York, 1987), pp. 25, 27, 31 (1987),

[12] A. Pais, *Subtle Is the Lord* (Oxford University Press, Oxford, 1983), p. 149 (1983)

$E_{\text{in}} = M_0 c^2$ is not defined but mathematically obtained. It is explained below.

I quote from the paper

$$KE + M_{\text{rest}} c^2 = M_{\text{motion}} c^2 = \text{Total Energy due to motion when } v \sim c \quad (17)$$

When a body is at rest, i.e. $v = 0$, $dx = 0$, $dW = dK = 0$, then under this condition eq.(17)

becomes

$$0 + M_{\text{rest}} c^2 = M_{\text{rest}} c^2 = \text{Total energy due to motion when } v \sim c (v = 0) \quad (18)$$

Einstein wrote

$$\text{Total energy due to motion defined when } v \sim c (v = 0) = E_{\text{rest}} \quad (19)$$

$$E_{\text{rest}} = M_{\text{rest}} c^2$$

(ii) The ways $E_{\text{in}} = M_0 c^2$ or $E_{\text{rest}} = M_{\text{rest}} c^2$ is obtained is not correct.

Einstein wrote E_{in} is E_{rme} .

E_{rest} is obtained when body is rest ($v = 0$, $dx = 0$)

Then very first equation

$$dK = dW = \mathbf{F} \cdot d\mathbf{x} = F dx \cos\theta \quad (1)$$

is zero. Hence other equations are non-existent. Thus E_{rme} is obtained from non-existent equation, as there is output without input. It is inconsistent.

It is main theme of the paper.

(iii) As far as

$$E_{\text{motion}} = E_T = KE + M_{\text{rest}}c^2 = M_{\text{motion}}c^2$$

or $E=mc^2$

is concerned I have no objection. KE plus rest mass energy is total energy. It is true.

Also there is paper published in JVR regarding this,

Energy in Vectorial Relativity: $E \approx m.c^2$

J A Franco R [Paper in PDF \(246 KB\)](#)

I have no objection to this, it is indeed correct $E \sim mc^2$. It is justified from some experimental observations and in many cases $E=mc^2$ is not confirmed yet. So it is open possibility.

My objection how

$$E_{\text{rest}} = M_{\text{rest}} c^2 \quad \text{or} \quad E_{\text{in}} = M_0 c^2$$

is obtained from non-existent equation?

(iv) I am ready to drop section B

Kindly forward my response to Reviewer for consideration and let me know his opinion. Hope that my point of view will be followed . In previous report reviewer maintained that I have disagreed with $E=mc^2$, which is not correct.